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THE WORK OF MUSEUMS IN WAR TIME

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By HARLAN I. SMITH

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THE WORK OF MUSEUMS IN WAR TIME

By HARLAN I. SMITH
GEOLOGICAL SURVEY, OTTAWA, CANADA

INTRODUCTION

THE work of museums in war time, instead of being stopped or curtailed to effect economy, should be speeded up and directed from the usual paths into those that will help most to win battles, to provide and save food, and to teach us to fight with other than physical weapons. Only a comparatively few suggestive examples of the many war-time museum activities can be here given.

Part of the work of many museums, especially overseas, was suspended sooner or later after the outbreak of the war. Economy was [illegible] in museum explorations and publications. It is true that there was little interference with the care and preservation of specimens and such routine and scientific work as could be carried on by the remaining permanent staff with reduced funds, but many museums were closed to the public. As the war progressed, however, the extreme shortsightedness of this policy of supposed economy was realized. Experience in military and economic matters, especially in the providing of munitions, the preservation and salvage of the lives of the soldiers, and the securing of sufficient food for the soldiers and civilians of the world, has shown how vital the work of museums can be in war time.

The organization of the educational interests was found to be one of the most important factors in the defense of a country. In war time, museums, instead of being closed, should be open for longer hours. Museum work, instead of being reduced to effect economy, should not only be increased but directed into the most useful channels. If not already represented, a historic section might well be added in war time. Another section illustrating the broader features of progress in transportation and engineering should furnish inventive minds with a stimulus for productive work. The great value of a medical and surgical department is obvious. The most important phase of all in war time, perhaps, would be exhibits illustrating the necessity of conserving and extending our food supply.

Discoveries in pure science and exhibitions making generally known such discoveries are more far-reaching in their beneficial results than narrow economic explorations. To close museums and schools in these modern war times is like beating all the plowshares into swords—sacrificing essential wheat for an antiquated and little-used weapon.

The education of soldiers, Red Cross workers, relief workers, miners, factory workers, farmers and many others has had to be undertaken during the war on a hitherto unsurpassed scale. It was found that unusual minerals had to be examined and new deposits had to be sought in order to make munitions; new antiseptics and appliances had to be studied and exhibited to those who were to use them; sanitary contrivances had to be seen; methods of increasing or protecting the food supply had to be developed and made known to millions of people. All this work could not be carried on economically and effectively without exploration, laboratory experiments, exhibits, books, lectures, photographs, lantern slides, moving pictures, demonstrations, publicity, newspapers and travelling exhibits. Modern museum work includes practically all these activities and has to do with all these things.

Expeditions to show their results must adopt the museum method. The laboratory makes discoveries but does not permanently exhibit them to the public unless it does museum work. Schools teach by the descriptive method. Museums show the actual objects, which, usually are merely described or pictured through the medium of school and library. Museum moving pictures are censored for the good of the people rather than for the swelling of box-office receipts. Museum publicity is to acquaint the people with beneficial facts.

Science began to come into its own as the war progressed. England appropriated more for scientific research in one year than in all her previous history. At first many men were allowed to go to the front whose work was more valuable at home in war time. Now the French government will not even allow the inventor to experiment at the front because so many men who could not be replaced were lost by the former method.

The American Museum of Natural History in New York made special exhibits relating to the war. One of these showed various food plants used by aboriginal people, some of which might be developed for feeding our own people.

Most museum work is of a philanthropic nature. It nourishes, benefits and saves mankind, and even its war activities are of value in days of peace.

Every kind of museum can help in war work. For instance, art museums might assist in "camouflage." The scenic painters and artists of France and the United States have done much in this line. Natural History Museums have experts on the protective coloration of birds and insects. They know that a shore bird with dark back and white belly is less conspicuous than one which is uniform in color. They might plan a spotted uniform of unnoticeable colors so as to make a man crawling on an enemy trench at night as invisible as a grouse among autumn leaves.

Historical museums are important in war time as in no other period since they can stimulate the true patriotism that is so essential to success. In such a time collections of war material may be made that would be harder to secure at a later time.

A transportation and engineering museum should be a source of inspiration to potential Fultons, Faradays and Edisons. Medical and surgical museums could give great help in training doctors in war-time surgery. During war they have opportunities which might never recur for securing invaluable surgical material, such as is only to be had from the regrettable casualties of war, and though some of it may not be used until after the war, it should by all means be secured. Dr R. W. Shufeldt, of Washington, D. C., having made application for duty on the active list of the Medical Corps of the Army, has been assigned by General Gorgas to the Army Medical Museum. His work will consist in modernizing the present collection and preparing for the incoming medical and surgical material from the front.

The scientific or research museums, university museums, school museums, children's museums, kindergarten museums, public museums, recreation, tourist or vacation museums, farmers' museums, commercial museums, national museums and many other kinds of museums all have opportunities for war work.

Every department of a museum can do something to assist in war work. A few examples of what such departments as ornithology, zoology, entomology, herpetology, botany and geology can do may not be amiss here and examples of what can be done by the departments of art and archeology are mentioned elsewhere in this paper.

When the demand for more men for the battle-front comes at the same time as a demand for more food from agriculture and the other food-producing industries, it is essential to keep food from being wasted. Museum work can here be of great help. To save wheat from being destroyed by insects or rodents saves the planting of the necessary amount of land to make good that loss and releases just that many more men for the firing line. Killing birds that eat insects and weed seeds helps the enemy. Museum exhibits can be made to teach such things. The annual food loss in the United States from the ravages of insects on crops, according to the United States Department of Agriculture, exceeds a billion dollars. No doubt the loss in Canada is proportionate. Every careless person who kills a bird that is less injurious than it is valuable as an eater of weed seeds and insects is helping the enemy by killing our bird allies and is giving security and comfort to the weeds and insects that reduce our food supply. Most of our birds are of this beneficial class and are really our allies. Robbing their nests is also an aid to the enemy. One can hardly go into the country without seeing boys and even men killing birds. Doubtless many of these persons would be surprised to know that they were practically traitors and, if they realized it, would gladly stop aiding the enemy. For many years museum exhibits have been teaching such facts about birds and how to conserve the beneficial varieties. Surely these efforts should not be relaxed in war time but rather increased.

In conserving our food supply, so essential during the war, the depredations of rodents should not be overlooked. Plagues of these animals have troubled us from time to time since prehistoric days. In 1907 and 1908 meadow mice overran 80 per cent. of the culivated area of the lower Humboldt valley, California, necessitating the replanting of much of the alfalfa needed to produce meat food. Over $6,000,000 worth of grain, and that, too, at the former cheap pre-war prices, are destroyed annually by ground squirrels in North Dakota alone. Every year rodents destroy 15 per cent. of the crop in Wyoming. Something like $12,000,000 worth of food, at pre-war prices, is destroyed by rodents annually in Kansas and a greater amount in Montana. It is estimated that over $100,000,000 loss of food is due to rodents in the Pacific states alone. The losses in Alberta, Saskatchewan, and Manitoba are probably in somewhat similar proportion to those of North Dakota and Montana. At present prices the losses to the allies would be much greater. Rodents set at naught the labor of regiments of farm hands.

Domestic rats and mice also cause fires that burn both buildings and food. The present annual cost of these rats and mice alone to the United States is probably over $400,000,000, which must be added to the losses by wild rodents above mentioned. If we did not have this loss the farm hands, needed to replace it, could enlist. Our zoologists in museums of natural history share the responsibility for the control or destruction of injurious rodents. They understand how to do this without injuriously disturbing the balance of nature. Our food controllers need their services now as never before. To a certain extent information from museum men has already been used by the Canadian Food Controller.

The firing line in the greatest struggle for human existence is not "Somewhere in France" but in our fields and forests, in our domestic animals, and in our own bodies. This supreme struggle is not between autocracy and democracy, but between man and the lower forms of life. Insects keep men from large parts of the world as much as bullets keep them from No Man's Land. They keep these parts much freer of men than the submarines do the "verboten" zone. They levy this enormous tribute on all mankind, friend and foe alike. Some day the world may issue liberty bonds to clear the lines of communications in other parts of South America as the United States has opened those of Panama, and to give us liberty from the tribute we are forced to pay not only to the mosquito but also to the Hessian fly, the gypsy moth, the San Jose scale, the Mexican cotton-boll weevil, the English sparrow, the Colorado beetle, the German carp, and a host of other invading and native marauders.[1]

Zoological exhibits in natural history museums may be made to teach that every toad is worth over a dollar a month, or about twenty dollars a year as a worker in war gardens and fields to protect the growing plants from destructive insects. If a hundred toads are worth a hundred dollars a month to a country's food supply surely this is worth teaching to small boys and others who kill toads. The savings by toads would buy many liberty bonds and contribute much to the Red Cross. To teach this through the medium of the museum exhibit may easily save the lives of many thousands of toads and so increase our crops, thereby releasing men from farming for fighting—from forking for firing.

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[1] Compare Eigenmann in SCIENCE, 1917, p. 303.

Wood and other forest products have almost innumerable uses in warfare. The War and Navy Departments, the Emergency Fleet Corporation, Committees of the Council of National Defense, and manufacturers of war orders have all demanded exact knowledge about forest products and never before has this demand been so urgent. Much of the need for knowledge has concerned aircraft material and problems relating to the construction of wooden ships and vehicles. Hardwood distillation plants have needed information in order to increase the production of acetone and other things needed for munition making. Museum botanists can make exhibits and otherwise give publicity to the fact that wheat rust must die out where there are no barberry bushes because it lives part of its life in a form not recognized by the average farmer, on a barberry bush. Had this been done it would have been easier to secure the consent of the farmers to cut their prized ornamental barberry bushes.

What the geologists of a museum can do in war time is well illustrated by the following single statement made by one geologist:

> "My work is to be concerned with the location of trenches and dugouts. We must have trenches into which the country will not drain. These slashes in the earth can be made so that they will do their own draining. Mud, mud, mud! That is the trench curse which brings on trench feet and puts the soldier out of business."

And then on a sheet of paper he drew the slope of a hill and explained how if located in one place, because of the peculiar stratification of the earth, the trench would act as a cesspool or reservoir, gathering in all the waters of the neighboring terrain, while if placed elsewhere it would be immune from this disadvantage and through certain strata furnish a natural waste pipe for the superficial waters.

The uncertainty of action in the Mexican oil region and the increased need of oil for the navies of the allies has created a great demand for geologists to cooperate with business men in locating oil fields. Museum geologists are now lending a hand here.

The general knowledge of museum men may be applied to war work and in some instances be of greater service than scores of men. For instance, as related to hospital work, museum men have drawn attention to a method of treating shell shock, first published in literature read by museum men but not yet seen by the heads of army hospital work. Another example, relating to naval work, is the use of man power instead of modern conveying machinery for coaling war ships when the delay of a few seconds in reaching the place to fire a shot might decide a battle and when the machinery would be so useful in peace times that its installation would pay, war or no war. A third example, relating to the defense of a naval base, is where scores of men were used to guard its water supply. Here it was demonstrated by a museum worker that the reservoir could still be contaminated with poison or disease germs by one person without danger of capture by the guards and that the suggested remedy for this war-time danger was also necessary in peace times to protect the city from inadvertent pollution.

General Activities

The methods used by museums in times of peace may be used in war time. What is needed is that every museum worker should think of what museum work is most necessary in war time, and that he should lay aside less important work to give precedence to this war work.

In war time, as in peace time, a museum is not a haven or place to provide a living for those who can not get the opportunity to do research work or teaching at a living wage elsewhere. It is not a place where museum work may be neglected in order to do a pet piece of research or teaching, but one where research and teaching may be a legitimate part of museum work just as museum work may be a part of the work of research or teaching.

In war time, as in peace time, museum heads should stop merely hoarding curios or specimens given them or which they get on expeditions. They should plan first of all what they wish to accomplish and then use every means to accomplish it. The various means would include explorations, researches, scientific publications, guide books, newspapers, exhibitions, casts, models, labels, maps, photographs, charts, diagrams, lantern slides, moving pictures, temporary exhibits, travelling exhibits, and many others.

In peace times some museums send out exploring expeditions to explore the unknown in both distant and near-by regions. One museum expedition during the war undertook to collect designs, dye stuffs, native foods, fabrics and costumes of significance in view of war conditions. Many museums also carry on scientific research in their own laboratories. One laboratory affiliated with a museum was the only one in a whole country which had the apparatus for making a certain substance of vital importance in the making of a much-needed high explosive, and this laboratory has made tons of this substance for the allies. Specimens to be used for research are stored in scientific museums and here they are available for war research. From here vast numbers of publications are issued, so the machinery of distributing the results of the research is already at hand. One man experienced in this work became editor for the U. S. Red Cross. Some museums confine their attention to the locality where they are situated and from nearby river-bottom to nearby hill-top enough natural-history specimens may be collected to fill them. Others are for little children, and kindergartners are employed to instruct the children by means of the museum specimens. Some are chiefly for recreation, although their exhibits are all instructive.

In war time, recreation is especially needed to relieve the unnatural strain. The exhibits in some museums are priceless. In others they are inexpensive by-products of other work, but these latter may be as useful as expensive exhibits. In some the exhibits are made by experts. In others useful exhibits may be prepared under expert direction by local carpenters and laborers. However, such work as painting the backgrounds of exhibits, making glass models of parts of flowers or representations of objects in wax required for exhibits in some wealthy museums can not be done by untrained men. Some museum cases cost hundreds of dollars, but a useful exhibition case, suitable at least for schools or temporary exhibits, may be made for ten dollars wherever window sashes are available. The cost of cases is, therefore, no argument for not making temporary war-time exhibits. Police and fire protection which can not well be had for objects in private homes is to be had for specimens deposited in any large museum. Specimens of mammals and birds were formerly stuffed, but in modern museums they are now mounted according to a model, just as a house is built according to an architect's plans and specifications. In this way groups are made representing the specimens of animals and plants as if they were actually alive in their natural homes. These peace-time activities of museums were discussed at some length and were illustrated in my article on the "Development of Museums and their Relation to Education," in THE SCIENTIFIC MONTHLY for

August, 1917. The illustrations here given show still other phases of museum work that may serve in both times of peace or war.

WORK SHOPS

Skilled mechanics are required in the shops of a museum where all kinds of museum work is to be done. Many exhibits needed in fighting a war can be made only by such very specially skilled men.

SKILLED MECHANICS ARE REQUIRED IN MUSEUM SHOPS. In the Museum of the Geological Survey, Canada.

EXHIBITS

The pedagogic exhibits so useful in peace time, such as those showing the characteristics of moths and butterflies, may give place during war to exhibits especially appropriate for the time. For instance, a war-time aeronautic museum has recently been established in a temporary building near the Smithsonian Institution. This is at present solely for the aeronautic experts of the United States War Department, and provides facilities for the assembly and study of all types of aircraft machines and appliances. After the war it may be opened to the public.

In peace times an exhibit of inexpensive specimens such as a lump of lime, a pail of tangle-foot, and common birds with labels and pictures, all from the city of Ottawa and made at no further cost except for the cutting of branches from various nearby trees, label writing and photographs, helped to save the shade trees of the city. These exhibited common specimens from nearby instead of expensive specimens from afar and formed as useful a natural-history exhibit as a diamond or dinosaur costing thousands of dollars. So in war time an exhibit that is cheap may be as useful as one that is expensive.

PEDAGOGIC EXHIBIT. Showing the characteristics of moths and butterflies, in the Geological Survey Museum, Canada.

The Division of Exhibits of the United States Food Administration, Washington, offers to assist any museum to develop a special exhibit to illustrate the need of conserving foods. A handbook on "Graphic Exhibits" has been printed. Mimeograph copies of plans for larger exhibits have been prepared. Copies have been secured of a series of 13 charts, designed and written by Elizabeth C. Watson, under the title, "Why Food Conservation is Necessary." All these are sent to any museum upon request. Food-conservation exhibits have been made in Chicago, New York and Washington.

Museums might show the various fish, shellfish, muskrats, voles, and many other foods not supposed to be edible or not much used, but which are not only good food but especially excellent. At least one museum made such an exhibit which also included illustrations of methods of preventing the average waste of about 10 per cent. of our food.[2]

Exhibits showing the close ecological relationships of all plant and animal life and of the links connecting up our food

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[2] See *American Museum Journal*, 1917, pp. 188 and 295.

Saving the Shade Trees of Ottawa by an Exhibit of Inexpensive Specimens composed of a Lump of Lime, a Pail of Tanglefoot and Common Birds with Labels and Pictures, all from the City of Ottawa. **In the Geological Survey Museum, Canada. Useful specimens from nearby instead of expensive specimens from afar.**

If an Exhibit **made at no cost except for the cutting of branches from various nearby trees, label writing and photographs can help to save the shade trees of a city, it is as useful a natural-history exhibit as a diamond or dinosaur costing thousands of dollars. In Geological Survey Museum, Canada.**

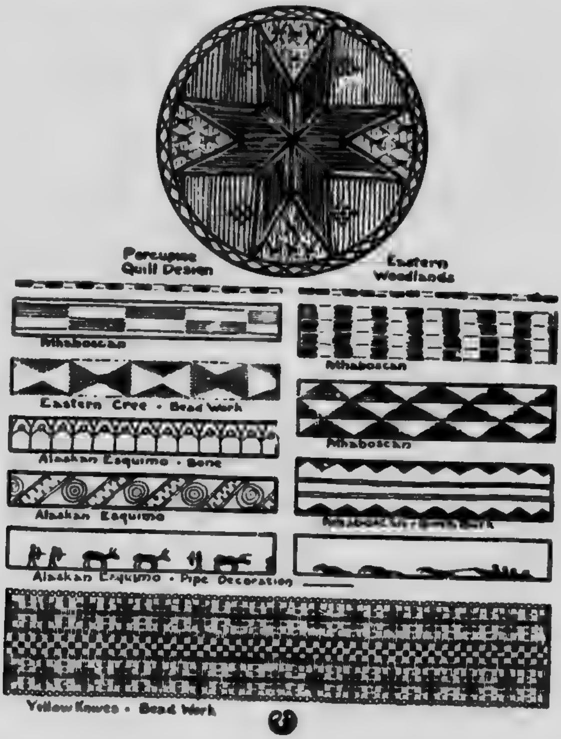
supply with the inorganic world would be desirable features in a food exhibit. Such an exhibit should also display the bacterial causes of food decay and the most approved means of preservation—drying, canning, cold storage, pasteurizing, etc.

During the world's food emergency brought on by the war, the diseases and the fungi, smuts, rusts, rodents, and similar enemies that attack cereals may be fought by means of museum exhibits of specimens, enlarged drawings, methods of sterilizing seeds, fertilizers and the like. Displays of posters and museum publicity through the usual channels of the press may also be used to advantage.

Such things as gas masks, helmets such as are used for protection against rifle and shrapnel fire, medical officers' belts for carrying emergency medicines, dressings and similar things, an operating room fully equipped, outfits for sterilizing water, filters, equipment for fitting railway cars for the transportation of the wounded, and many similar things of use in informing prospective soldiers and manufacturers of army supplies have been exhibited in the United States National Museum by the Medical Department of the United States Army.

MUSEUM SPECIMENS AS MOTIVES FOR DESIGNS

Designs from Indian exhibits in the Museum of the Geological Survey, Canada, were used long before the war by all the Ottawa school children in their art work. The war has cut off the sole supply of designs from many manufacturers of both Canada and the United States which need new designs constantly. There are over 300 different industries or about 1,000 factories in Canada alone which use designs. To meet this sudden stoppage of the foreign-design supply and the demand for distinctively Canadian designs so useful in building up and holding Canadian markets the archeologists of the Geological Survey have selected from all museums a very complete series of specimens of the prehistoric art of Canada suitable as motives for designs and trademarks for the use of manufacturers and hope to issue an album of them. Meanwhile some manufacturers are inspecting them in the museum and photographs of the specimens are being sent to others. Animals, plants, minerals, fossils and other museum specimens, especially historic Indian art, may be of similar service. A good design is worth thousands of dollars. A lecture on the subject illustrated with lantern slides is available. Articles have been prepared for the press and a travelling exhibit has been made and will go first to the commercial museum of the Department of Trade and Commerce. All the Canadian artists and art schools have been asked to cooperate by using the material for over fifty manufacturers listed by the museum as anxious for these designs. The distinctive Canadian motives have already been used in decorating curtains, art pottery, tiles, pipes, electric-lamp stands, and dresses, and also in the art schools.



Designs from Indian Exhibits in the Museum of the Geological Survey, Canada, are used by all the Ottawa school children in their art work. In war time the manufacturers requiring new designs and unable to get them in the usual way resort to such museum specimens.

Notable success in this use of material by industries has also been made since the war began by the American Museum of Natural History in New York. There specimens from Peru, Mexico, Siberia, etc., have been used extensively by the designers for the silk mills in replacing foreign designs.

SIGNS AND LABELS

Classifying and case signs and encyclopedic species labels are needed in war time and were all too scarce in times of peace.

Classifying and Case Signs and Encyclopedic Species Label. Sheep and Goat Group. Rocky Mountains Park Museum. These mounted animals were assembled by local labor at regular wages under supervision.

The Guide Book to Rocky Mountains Park Museum, a Recreation, Tourist or Vacation Museum, is appreciated by Indian visitors.

GUIDE BOOKS

Some guide books of certain museums are appreciated by visitors in peace times. In war time the aid of every large or small part of the population is desirable. For example, those Indians unable to go to the front and those generally having leisure may be instructed by means of publications, lectures and other information from museums as to what products were imported from enemy countries that are of a kind Indians naturally make well, as to the technique and decoration of these objects and the places to market them. In this way the Indians may be rallied to assist in providing manufactures to replace those cut off by war during and after the war.

PUBLISHERS ARE ENCOURAGED TO MAKE POSTCARDS OF THE ROCKY MOUNTAINS PARK MUSEUM, and in this way, through the natural channels of trade, knowledge that the museum is maintained by the government, for research, education and recreation, and that it is free is spread far and wide without any expense to the museum.

POSTCARDS

Publishers have been encouraged to make postcards of the museums and the exhibits in them. In this way, through the

IN PEACE TIMES GENERAL VISITORS COME TO THE GEOLOGICAL SURVEY MUSEUM, CANADA, for recreation. In war time recreation is necessary to relieve the strain on both civilians and soldiers.

NORMAL-SCHOOL STUDENTS STUDYING IN THE MUSEUM OF THE GEOLOGICAL SURVEY, CANADA. On graduation they scatter and each one spreads what he has learned among his scholars. In this way a knowledge of those museum subjects of use in war can be spread far and wide.

natural channels of trade, such knowledge as that a certain one is maintained by the government, for research, education and recreation, and that it is free is spread far and wide without any expense to the institution. Such methods may be well used in war time. The Chicago Art Institute was the first museum to obtain from the United States Post-Office Department the excellent right that any one might mail its bulletin to soldiers by the simple means of affixing a one-cent stamp to the cover. To the soldiers, as to the average reader, some museum publications are more interesting than others, yet there are few that would not have an interest for a soldier or a prisoner of war from the town in which it was published.

MUSEUMS HAVE LIBRARIES USED BY BOTH STAFF AND VISITORS. Geological Survey Museum, Canada.

LIBRARIES

The libraries used by both staff and visitors often contain books not to be had elsewhere. For instance, one book containing drawings desired by a number of large manufacturers in Canada, now that the supply of designs from Europe is so nearly cut off, was only to be seen in a few museum libraries and other copies could not easily be secured, as the book was published in Holland.

(To be concluded)

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THE WORK OF MUSEUMS IN WAR TIME—II

By HARLAN I. SMITH

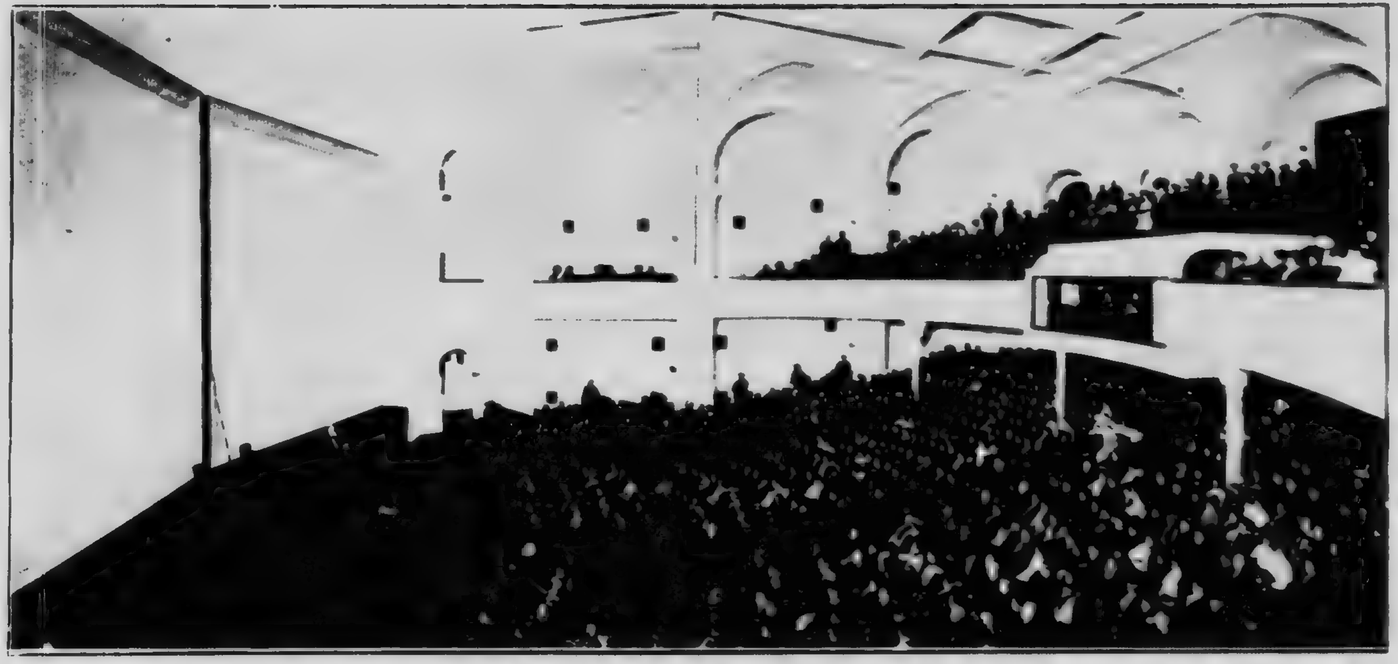
GEOLOGICAL SURVEY, OTTAWA, CANADA

Visitors

IN peace times most visitors come for recreation. The report to the British Government Committee on the Health of Munition Workers states that observations for a year on the output of workers employed in making fuses showed that a reduction of working hours was associated with an increase of production both relative and absolute. Generally, the cumulative effects of fatigue neutralize and overpower efficiency produced by practise. In the absence of rest and recreation the fatigued worker has no opportunity for complete recuperation and his output, though more uniform, remains permanently at a lower level than that shown by a worker who has had rest and recreation.

Taking Moving Pictures of Birds on an Expedition of the Geological Survey, Canada.

Some museums are devoted entirely to recreation, but never-



MUSEUMS LIKE UNIVERSITIES HAVE LECTURE HALLS AND VAST AUDIENCES USE THEM. In the American Museum of Natural History. They may be well used in war time.

theless all the exhibits are instructive. Recreation now is especially necessary to relieve as much as possible the unnatural strain on both civilians and soldiers. Properly administered museums not only furnish this healthful distraction but at the same time can also instruct and inspire.

MUSEUM LECTURES

Museums like universities have lecture halls and vast audiences use them in ordinary times. In war time these and their illustrative apparatus for projecting lantern pictures and moving pictures may be well used not only for war-time publicity but also for giving recreation or instruction. The instructive lectures may be given to the forces being trained and to convalescent returned soldiers who are unable to carry on their former occupations and who need a new means of livelihood. The recreative lectures may be given to ease convalescent suffering. The moving pictures, of such cheering subjects foreign to war and its frightfulness as birds, photographed on expeditions, would serve well for this purpose. They would reach men who came to realize while lying wounded how sweet life and nature are when compared with the sordid rush for mere money.

MUSEUM PHOTOGRAPHY

Thousands of negatives, prints, maps and lantern slides are made by the Photographic Division in the Museum of the Geological Survey, Canada. The lantern slides are used in the lecture hall and are loaned throughout Canada. This work is also done in many other museums and is part of the education needed to make a people efficient in the arts of warfare and in those necessary behind the lines as well as always needed in the arts of peace. The museum workers who make and use these materials, often taking photographs under difficult situations resembling some war conditions, are fitted to assist in developing new war-time photographic necessities such as are used by the flying corps in making photographic maps, detecting camouflage, etc., and that are absolutely necessary for the protection of an army as well as the destruction of its adversary. These workers are also better qualified than the average photographers to become teachers of such photographic work to the fighting forces.

MUSEUM VISITORS FUTURE SOLDIERS

Classes of high-school children who in peace times marched to the lecture halls of the great museums grew up during the

THOUSANDS OF NEGATIVES, PRINTS, MAPS AND LANTERN SLIDES ARE MADE BY THE PHOTOGRAPHIC DIVISION OF THE GEOLOGICAL SURVEY MUSEUM, CANADA. The lantern slides are used in the lecture hall and are loaned throughout Canada.

CLASSES OF SCHOOL CHILDREN IN LINE OF MARCH TO THE LECTURE HALL OF THE AMERICAN MUSEUM OF NATURAL HISTORY.

continuation of the world war and contributed many men and officers to all branches of the fighting forces. Over seven thousand school children came to hear one lecture. This shows that the work of teaching school children in the regular subjects which are of use in war time must continue with increased efficiency during war so that suitably trained material may always be available. No one ever knows how long a war may last. Even exhibits of objects connected with the war, such as guns and shells, may be used in a series to attract children to exhibits instructing them in regular studies such as history and physics, which will always be needed by both the citizens and soldiers of a country at war.

OVER 7,000 CHILDREN CAME TO HEAR ONE LECTURE IN THE AMERICAN MUSEUM OF NATURAL HISTORY.

TEMPORARY AND LOAN EXHIBITS

Museums loan space for horticultural and other temporary exhibits. These are placed sometimes for one or two days around permanent exhibits. In war time some museums loan space for war-time exhibits. For instance, the American Museum has had special war-time exhibits of food and health in war and peace. A popular handbook was issued for this exhibit for sale at the news stands. Both were especially prepared for

EVEN MUSEUM GROUNDS ARE AVAILABLE FOR SOCIAL USE. Folk dances are held by the children on the lawn of the American Museum of Natural History. In war time this ground is used for drilling.

the use of soldiers. All the museums of the country might well loan space for the exhibition of loan exhibits from the Food Controller. In June, 1917, Red Cross Week was held in the Museum at Newark, N. J., and a complete set of Red Cross supplies, conforming in every respect to the latest specifications of the American Red Cross, was exhibited. It included hospital linen and supplies, surgical dressings, operating-room supplies, and linen, patients' clothing and such supplies as the Red Cross furnishes to the army and navy. A similar temporary exhibit including models and pictures was made in the U. S. National Museum.[3]

Museums Loan Space for Horticultural and Other Temporary Exhibits in Peace Time. These are placed for one or two days around permanent museum exhibits in the American Museum of Natural History. In war time this museum provided space for war-time exhibits.

The windows and the glass of the cases in the Provincial Museum at Halifax were broken by the terrific explosion of the munition ship that blew up in the harbor. A water pipe burst and snow stormed into the museum, so in this emergency museum work was stopped and the cases were covered with boards and used as tables for Red Cross and other relief supplies.

Museums have aided in the food-conservation campaign of the United States National Emergency Food Garden Commis-

[3] Cf. U. S. N. M. Rep. 1916, p. 121.

EXHIBITS ARE PUT IN TRAVELLING CASES TO BE SENT FROM SCHOOL TO SCHOOL IN OTTAWA.

SCHOOL BOYS CARRY THE MUSEUM TRAVELLING EXHIBITS FROM ONE SCHOOL TO THE NEXT IN OTTAWA.

sion by distributing to visitors quantities of manuals attractively illustrated and printed. This material and other literature were placed with the "help yourself" cards where visitors to the museums readily see and take them.

Museum Grounds

Even museum grounds are available for war service as well as social service. Folk dances were held in peace times by the children on the lawn of the American Museum of Natural History, but, after the United States entered the war, the grounds were used for drilling. The Brooklyn Museum grounds were planted by the museum workers and considerable food was raised by them.

Travelling Exhibits from the Museum of the Geological Survey are used in the Schools of Ottawa.

Travelling Museums

Exhibits are put up in travelling cases to be sent from school to school in Ottawa, St. Louis, Chicago, New York, and other places. School boys carry the museum travelling exhibits from one school to the next in Ottawa, while in St. Louis, New York, and Chicago, this system of museum extension has grown

A Commercial Museum on Wheels. The "Made in Canada Special."

so in recent years that a special auto delivery van is used for the purpose.

The St. Louis Public School Museum makes as many as thirty deliveries of such exhibits in a single day. It delivered 66,810 separately boxed groups of material to the schools during the school year 1916–1917, and has called into service an additional delivery truck. Every public-school teacher of St. Louis is welcomed to select from the new catalogue and order the

Commercial Exhibit in the "Made in Canada Special" Railway Train.

collections she can best use to illustrate the various lessons planned for the week. The delivery trucks serve every school once a week, collecting the material previously delivered and depositing the material ordered for the current week. The entire annual expense to the Board of Education of all this museum work, including overhead expenses, salaries, delivery service, and additions to the collections, averages about 14 cents per pupil served. This method serves the country in war time as does other educational endeavor, and may be applied to distributing special war-time instruction to schools, the public and the fighting forces.

THE CROWD VISITING THE COMMERCIAL MUSEUM IN THE "MADE IN CANADA SPECIAL" RAILWAY TRAIN.

A commercial museum on wheels, the "Made in Canada Special," carrying commercial exhibits on a railway train across Canada in peaceful years, was visited by crowds. The same means provides opportunity to spread useful war-time knowledge regarding conservation of food and fuel, the speeding up of necessary industries, the making of munitions, political propaganda as in the exhibition of captured guns, and the training of fighters. In the United States a Food Control exhibit has been installed in a railroad car.

MUSEUM EXTENSION

For years minerals have been given to Canadian schools by the Geological Survey, Canada. A covered tray containing

an elementary series is sent to the elementary schools, but cabinets containing five drawers to higher schools. Exhibits of things relating to war can be handled in the same way.

FOR YEARS MINERALS HAVE BEEN GIVEN TO CANADIAN SCHOOLS BY THE GEOLOGICAL SURVEY. A covered tray containing an elementary series is sent to the elementary schools; cabinets, containing five drawers, to higher schools.

COOPERATIVE LABELLING

Encyclopedic species labels were prepared as the text of the Handbook of the Rocky Mountains Park Museum by the Dominion Government and have already been used by eighteen different museums, the Rocky Mountains Park Zoo, and for several other educational purposes. Lantern slides have been made to illustrate some of them and these labels can consequently also be used as lecture notes. They need only to be shuffled when it is required to rearrange a lecture. The same method may be employed by the museums in supplying information needed by a nation at war.

RESTAURANTS

In large cities it is sometimes desirable to provide a restaurant in a museum so that students or other visitors may not have to go out. In the American Museum of Natural History, the restaurant is modelled after the ancient Mexican ruin of

ENCYCLOPEDIC SPECIES LABEL IN THE ZOO OF THE ROCKY MOUNTAINS PARK prepared as the text of the Handbook of the Rocky Mountains Park Museum by the Dominion Government, and already used by seventeen other museums and for several other educational purposes.

RESTAURANT IN THE AMERICAN MUSEUM OF NATURAL HISTORY. This is modelled after the ancient Mexican ruin of Mitla.

Mitla and, therefore, is an exhibit as well as a restaurant. In war time such restaurants should be made available to soldiers, sailors, and others engaged in activities of defense.

CONCLUSION

If the museum fraternity does not rise to the occasion and at least adjust itself to meet war needs and help the general progress of the world other agencies will take over what should be the most important part of museum activities. For instance, the Canadian department of Trade and Commerce opened a museum in January because of the need of such a museum in war time. Those in charge were not recruited from among museum men. The children's museums, which are at present apparently the chief hot beds of new museum ideas, are being made such by persons not formerly connected with museums. It was two boys who were trained in the Children's Museum in Brooklyn who sent and received the first wireless telephone message from Paris to Hawaii.

Now, when the young and active men from the small towns and the country districts of the whole world are passing through the great centers of culture such as London, New York and Paris, or are visiting them on leave of absence, is the very time when museums should be most active in entertaining, instructing, or offsetting the vicious experiences of the war. The cream of New Zealand, Australia, India, Canada, and many allied nations, gathers in London. What better time than now for the museums to offer these men attraction, recreation and instruction, and an inspiration to carry home to the individual corners of the world the seeds of the world's best fruits? Museum work, instead of being curtailed, should certainly be directed towards doing in war time its part both in fighting the war and in making up for the evils and deprivations caused by it.